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30. The article of claim 28 wherein the brightener concentration is at least about 3 mg per liter of the electroplating composition.

31. The article of claim 28 wherein the brightener concentration is at least about 4 mg per liter of the electroplating composition.

32. The article of claim 28 wherein the brightener concentration is at least about 5 mg per liter of the electroplating composition.

33. The article of claim 28 wherein the brightener concentration is at least about 6 mg per liter of the electroplating composition.

34. The article of claim 28 wherein the brightener concentration is at least about 8 mg per liter of the electroplating composition.

35. The article of claim 28 wherein the brightener concentration is at least about 10 mg per liter of the electroplating composition.

36. The article of claim 28 wherein the brightener concentration is at least about 15 mg per liter of the electroplating composition.

37. The article of claim 28 wherein the copper deposit is free of voids or inclusions.

38. The article of claim 28 wherein the electroplating composition further comprises a suppressor agent.

39. The article of claim 38 wherein the suppressor agent is a polyether.

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40. The article of claim 30 wherein the electroplating composition further comprises a suppressor agent.

41. The article of claim 40 wherein the suppressor agent is a polyether.

42. The article of claim 32 wherein the electroplating composition further comprises a suppressor agent.

43. The article of claim 42 wherein the suppressor agent is a polyether.

44. The article of claim 28 wherein the electroplating composition comprises a halide ion source.

45. The article of claim 44 wherein the halide ion source is present in a concentration of from about 25 to about 75 ppm of the electroplating composition.

46. The article of claim 28 wherein the electroplating composition is acidic.

47. The article of claim 28 wherein the one or more brightener compounds are present in a concentration of up to 10 mg per liter of the electroplating composition.

48. The article of claim 28 wherein the one or more brightener compounds are present in a concentration of up to 20 mg per liter of the electroplating composition.

49. The article of claim 30 wherein the one or more brightener compounds are present in a concentration of up to 10 mg per liter of the electroplating composition.

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50. The article of claim 30 wherein the one or more brightener compounds are present in a concentration of up to 20 mg per liter of the electroplating composition.

Sub B2)

51. An article of manufacture comprising:
a semiconductor wafer substrate having one or more microvias that have an aspect ratio of at least about 4:1 and a diameter of about 200 μm or less,
one or more microvias containing therein an electrolytic copper deposit obtained from an electroplating composition that comprises at least one soluble copper salt, an electrolyte, a suppressor agent, and one or more brightener compounds that are present in a concentration of at least about 2 mg per liter of the electroplating composition.

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52. The article of claim 51 wherein the one or more brightener compounds are present in a concentration of at least about 3 mg per liter of the electroplating composition.

53. The article of claim 51 wherein the one or more brightener compounds are present in a concentration of at least about 5 mg per liter of the electroplating composition.

54. The article of claim 51 wherein the one or more brightener compounds are present in a concentration of up to 10 mg per liter of the electroplating composition.

55. The article of claim 51 wherein the one or more brightener compounds are present in a concentration of up to 20 mg per liter of the electroplating composition.

56. The article of claim 52 wherein the one or more brightener compounds are present in a concentration of up to 10 mg per liter of the electroplating composition.

57. The article of claim 52 wherein the one or more brightener compounds are present in a concentration of up to 20 mg per liter of the electroplating composition.